RF POWER TRIODE

Radiation cooled triode of metal-glass construction intended for use as an industrial oscillator

QUICK REFERENCE DATA				
Oscillator output power (W_o-W_{feedb}), typical	W_{osc}		1.58	kW
Frequency for full ratings	f	max.	50	MHz

To be read in conjunction with "General Operational Recommendations"

A. RF CLASS C OSCILLATOR FOR INDUSTRIAL USE

with anode voltage from a three-phase rectifier

OPERATING CONDITIONS continuous service

Frequency	f	50	50	50	MHz
Oscillator output power (W_o-W_{feedb})	W_{osc}	1.55	1.58	1.55	kW
Anode vootage	V_a	6	5	4	kV
Anode current	I_a	350	430	535	mA
Anode input power	W_{ia}	2100	2150	2140	W
Anode dissipation	W_a	460	480	490	W
Anode output power	W_o	1640	1670	1650	W
Anode efficiency	η_a	78	78	77	%
Oscillator efficiency	η_{osc}	74	73.5	72.5	%
Feedback ratio	V_{gp}/V_{ap}	15	15.5	20	%
Grid resistor	R_g	4.2	3.5	2.7	kΩ
Grid current, on load	I_g	120	130	150	mA
Grid voltage, negative	$-V_g$	500	456	405	V
Grid dissipation	W_g	23	29	41	W
Grid resistor dissipation	W_{Rg}	60	59	61	W

LIMITING VALUES (Absolute max. rating system)

Frequency for full ratings	f	up to	50	MHz
Anode voltage	V_a	max.	7	kV
Anode current	I_a	max.	560	mA
Anode input power	W_{ia}	max.	2.5	kW
Anode dissipation	W_a	max.	500	W
Grid voltage	$-V_g$	max.	1250	V
Grid current, on load	I_g	max.	210	mA
off load	I_g	max.	280	mA
Grid dissipation	W_g	max.	100	W
Grid circuit resistance	R_g	max.	15	kΩ
Cathode current, mean	I_k	max.	850	mA
Envelope temperature	T_{env}	max.	350	°C
Seal temperature	t	max.	220	°C

B. RF CLASS C OSCILLATOR FOR INDUSTRIAL USE,

with anode voltage from three-phase rectifier,

OPERATING CONDITIONS, intermittent service

Frequency	f	50	50	MHz
Oscillator output power ($W_o - W_{feedb}$)	W_{osc}	3.05	2.28	kW
Anode voltage	V_a	6	6	kV
Anode current	I_a	700	630	mA
Anode input power	W_{ia}	4200	3150	W
Anode dissipation	W_a	1000	750	W
Anode output power	W_o	3200	2400	W
Anode efficiency	η_a	76	76	%
Oscillator efficiency	η_{osc}	72.5	72.5	%
Feedback ratio	V_{gp}/V_{ap}	16	17	%
Grid resistor	R_g	3.3	2.7	kΩ
Grid current, on load	I_g	170	160	mA
Grid voltage, negative	$-V_g$	560	432	V
Grid dissipation	W_g	55	48	W
Grid resistor dissipation	W_{Rg}	95	69	W

LIMITING VALUES (Absolute max. rating system)

Frequency for full ratings	f	up to	50	MHz
Anode voltage	V_a	max.	7	kV
Anode current	I_a	max.	750	mA
Anode input power	W_{ia}	max.	5	kW
Anode dissipation	W_a	max.	See Fig. 2	
Grid voltage	$-V_g$	max.	1250	V
Grid current, on load	I_g	max.	185	mA
off load	I_g	max.	300	mA
Grid dissipation	W_g	max.	100	W
Grid circuit resistance	R_g	max.	15	kΩ
Cathode current, mean	I_k	max.	1.1	A
Envelope temperature	T_{env}	max.	330	°C
Seal temperature	t	max.	220	°C

C. **RF CLASS C OSCILLATOR FOR INDUSTRIAL USE,**

with anode voltage from single-phase rectifier without filter

OPERATING CONDITIONS , continuous service

Frequency	f	50	50	MHz
Oscillator output power (W_o-Wfeedb)	W_{osc}	1.565	1.525	kW
Anode voltage	V_a	5.4	4.5	kV
Anode current	I_a	320	380	mA
Anode input power	W_{ia}	2125	2100	W
Anode dissipation	W_a	490	500	W
Anode output power	W_o	1635	1600	W
Anode efficiency	η_a	77	76	%
Oscillator efficiency	η_{osc}	74	73	%
Feedback ratio	V_{gp}/V_{ap}	13	15.5	%
Grid resistor	R_g	4.2	3.5	kΩ
Grid current, on load	I_g	110	120	mA
Grid voltage, negative	$-V_g$	462	420	V
Grid dissipation	W_g	15	25	W
Grid resistor dissipation	W_{Rg}	50	50	W

LIMITING VALUES (Absolute max. rating system)

Frequency for full ratings	f	up to	50	MHz
Anode voltage	V_a	max.	6.3	kV
Anode current	I_a	max.	500	mA
Anode input power	W_{ia}	max.	2.5	kW
Anode dissipation	W_a	max.	500	W
Grid voltage	$-V_g$	max.	1250	V
Grid current, on load	I_g	max.	185	mA
off load	I_g	max.	280	mA
Grid dissipation	W_g	max.	100	W
Grid circuit resistance	R_g	max.	15	kΩ
Cathode current, mean	I_k	max.	780	mA
Envelope temperature	T_{env}	max.	330	°C
Seal temperature	t	max.	220	°C

D. **RF CLASS C OSCILLATOR FOR INDUSTRIAL USE,**

with self rectification

OPERATING CONDITIONS, continuous service

Frequency	f	50	MHz
Oscillator output power ($W_o - W_{feedb}$)	W_{osc}	990	W
Transformer voltage, RMS	V_{tr}	4.5	kV
Anode current	I_a	280	mA [1]
Anode input power	W_{ia}	1400	W
Anode dissipation	W_a	380	W
Anode output power	W_o	1020	W
Anode efficiency	η_a	78	%
Oscillator efficiency	η_{osc}	71	%
Feedback ratio	V_{gp}/V_{ap}	18	%
Grid resistor	R_g	2.7	kΩ
Grid current, on load	I_g	80	mA [1]
Grid voltage, negative	$-V_g$	216	V
Grid dissipation	W_g	14	W
Grid resistor dissipation	W_{Rg}	17	W

LIMITING VALUES (Absolute max. rating system)

Frequency for full ratings	f	up to	50	MHz
Transformer voltage, RMS	V_a	max.	5	kV
Anode current	I_a	max.	320	mA [1]
Anode input power	W_{ia}	max.	1600	W
Anode dissipation	W_a	max.	500	W
Grid voltage, at peak of mains frequency sine wave	$-V_g$	max.	1350	V
Grid current, on load	I_g	max.	110	mA [1]
off load	I_g	max.	150	mA [1]
Grid dissipation	W_g	max.	100	W
Grid circuit resistance	R_g	max.	15	kΩ
Cathode current, mean	I_k	max.	470	mA [1]
Envelope temperature	T_{env}	max.	330	°C
Seal temperature	t	max.	220	°C

1) Average over any mains frequency cycle.

HEATING : direct; filament thoriated tungsten

Filament voltage	V_f	5	V
Filament current	I_f	32.5	A

The filament is designed to accept temporary fluctuations of +5 % and −10 %.

CAPACITANCES

Anode to filament	C_{af}	0.2	pF
Grid to filament	C_{gf}	7.5	pF
Anode to grid	C_{ag}	5.1	pF

CHARACTERISTICS measured at V_a = 4 kV, I_a = 120 mA

Transconductance	S	3.3	mA/V
Amplification factor	μ	21	

COOLING

In general cooling of the tube working at the published operating conditions with matched load is not necessary. When the tube is mounted in a small cabinet adequate ventilation must be provided.

At non-matched load, combined with the highest operating frequencies a low-velocity air flow on the tube is necessary. A small fan will suffice; it is recommended to mount the fan underneath the tube socket.

ACCESSORIES

Socket	catalogue nr.	2422 511 05001
Anode connector	type	40665

MECHANICAL DATA

Dimensions in mm

Mounting position: vertical

Net weight: approx. 450 g

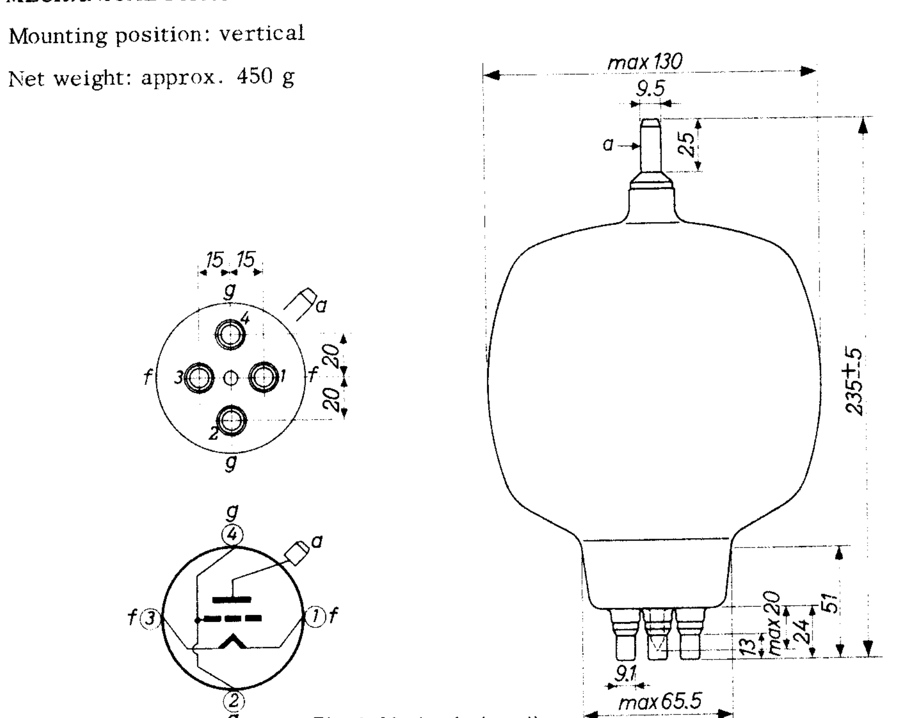


Fig. 1 Mechanical outline.

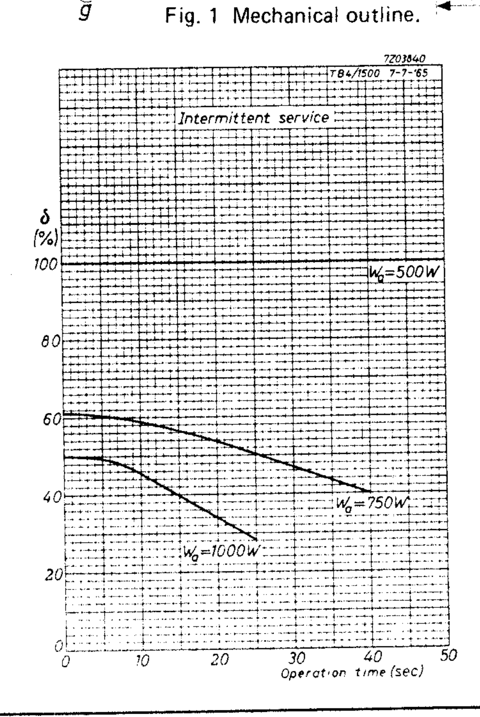


Fig. 2 Intermittent service. Limits of anode dissipation and cooling.

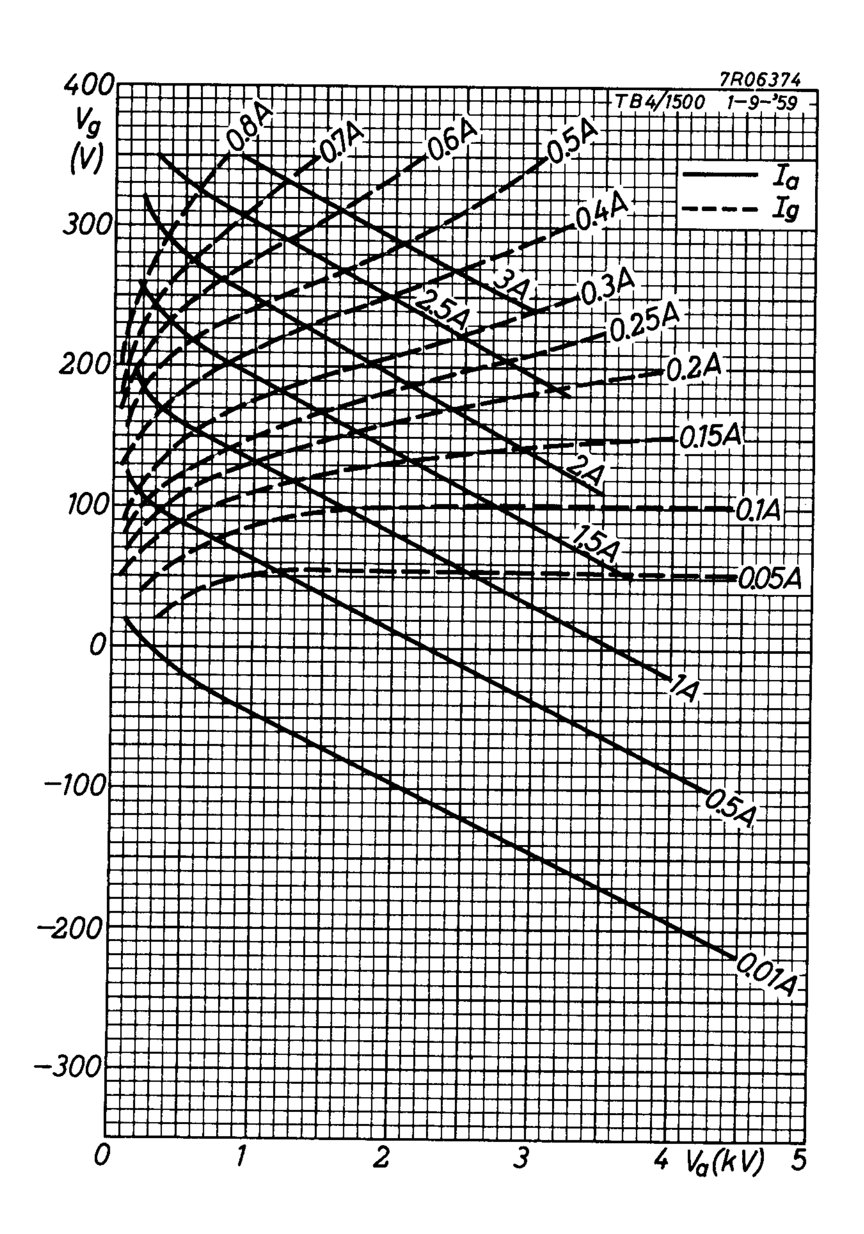


Fig. 3 Constant current characteristics.



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